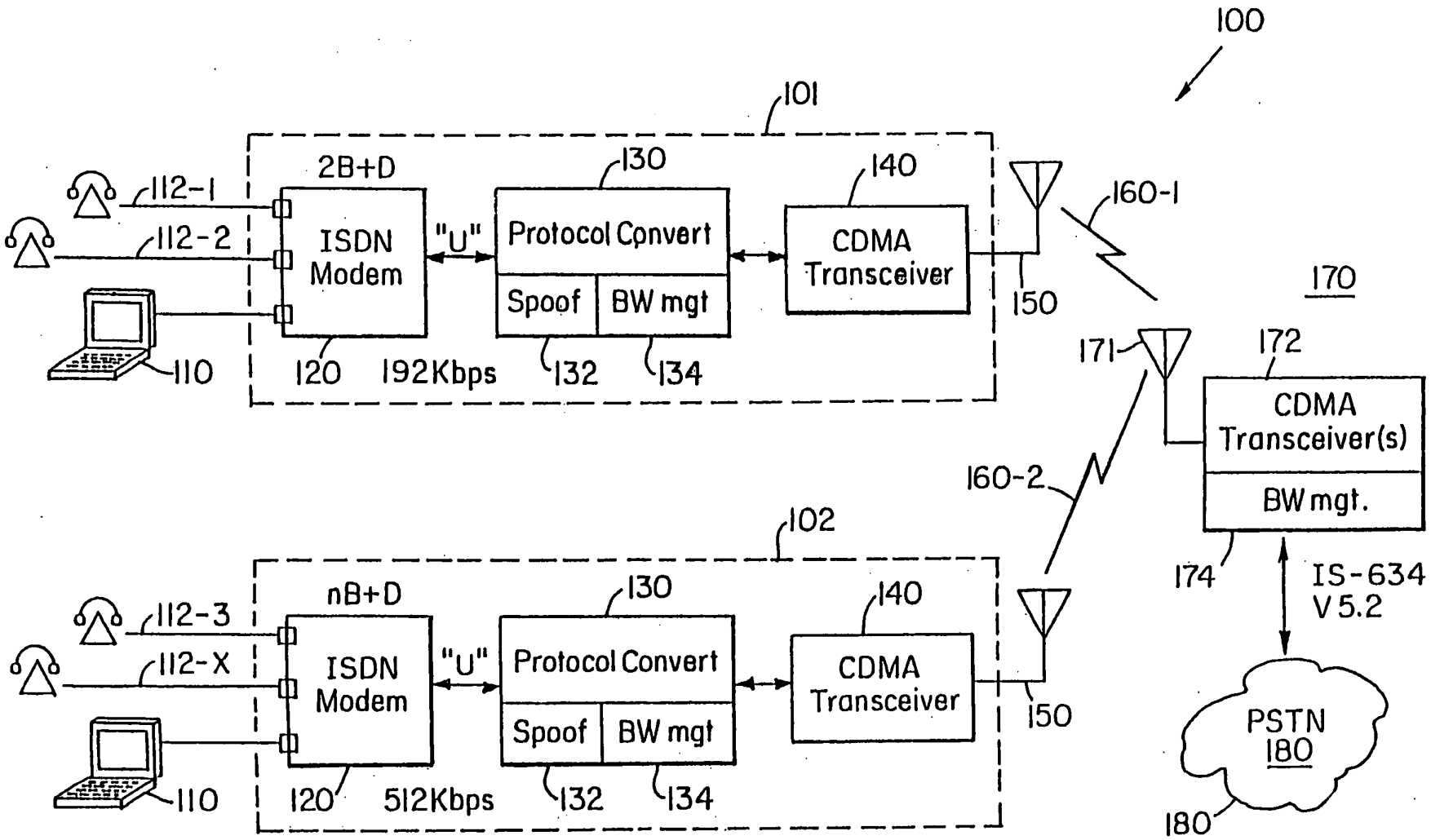
100
101
2B+D
130
140
112-1
112-2
ISDN Modem
"U"
Protocol Convert
CDMA Transceiver
160-1
Spoof
BW mgt
150
170
110
120
192Kbps
132
134
171
172
CDMA Transceiver(s)
160-2
BW mgt.
102
174
IS-634 V5.2
nB+D
130
140
112-3
112-X
ISDN Modem
"U"
Protocol Convert
CDMA Transceiver
150
Spoof
BW mgt
PSTN 180
110
120
512Kbps
132
134
180

FIG. 1

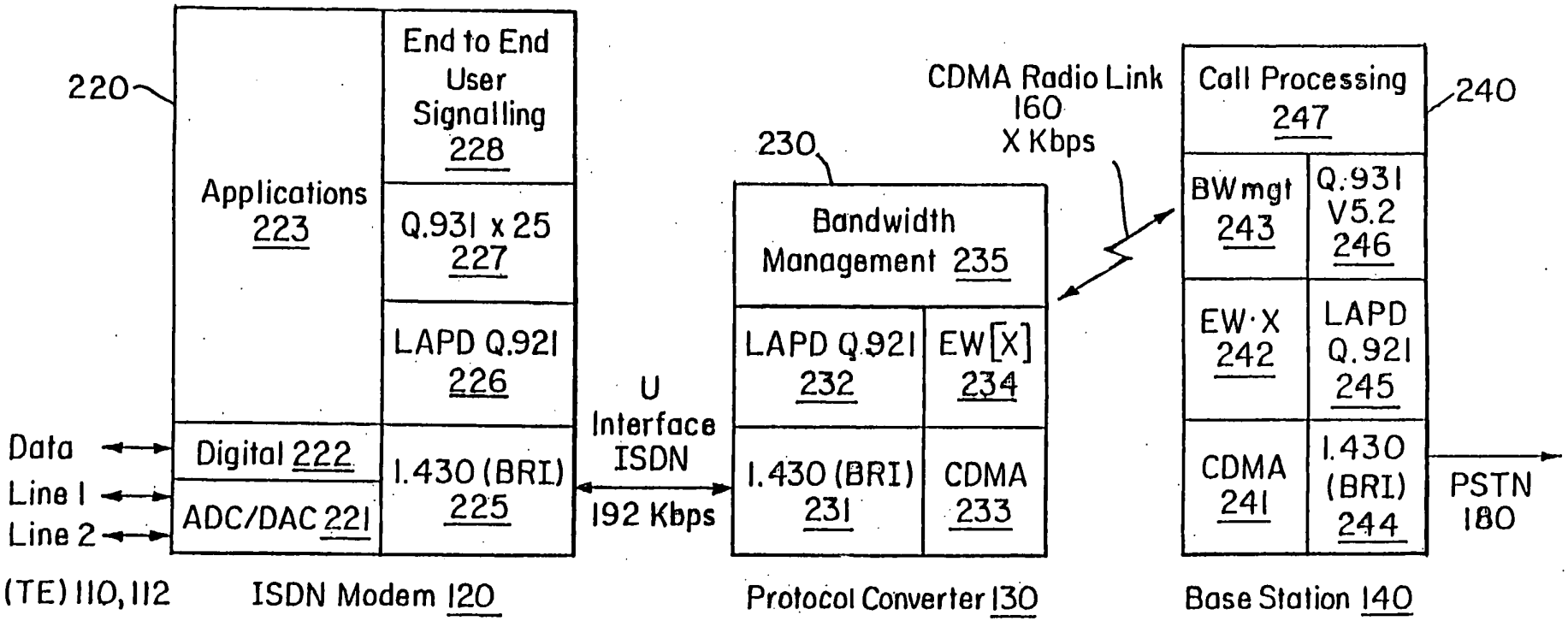
220
Applications 223
End to End User Signalling 228
Q.931 x 25 227
LAPD Q.921 226
Digital 222
ADC/DAC 221
I.430 (BRI) 225
Data
Line 1
Line 2
(TE) 110, 112
ISDN Modem 120
U Interface ISDN
192 Kbps
230
Bandwidth Management 235
LAPD Q.921 232
EW[X] 234
I.430 (BRI) 231
CDMA 233
Protocol Converter 130
CDMA Radio Link 160
X Kbps
240
Call Processing 247
BW mgt 243
Q.931 V5.2 246
EW·X 242
LAPD Q.921 245
CDMA 241
I.430 (BRI) 244
PSTN 180
Base Station 140

FIG. 2

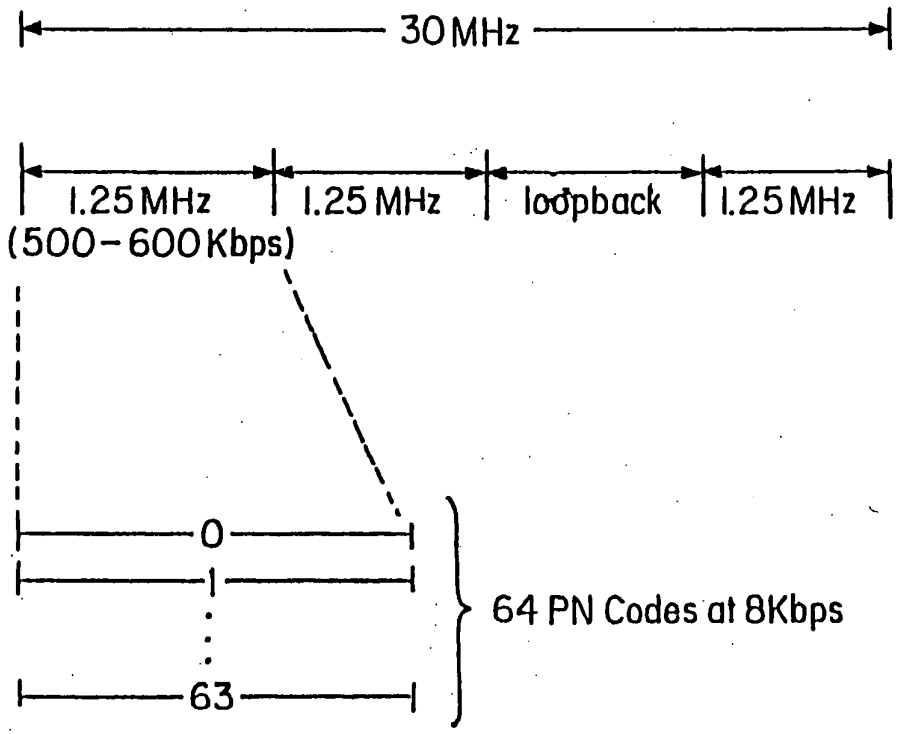
30 MHz
1.25 MHz
1.25 MHz
loopback
1.25 MHz
(500-600 Kbps)
0
63
64 PN Codes at 8Kbps

FIG. 3

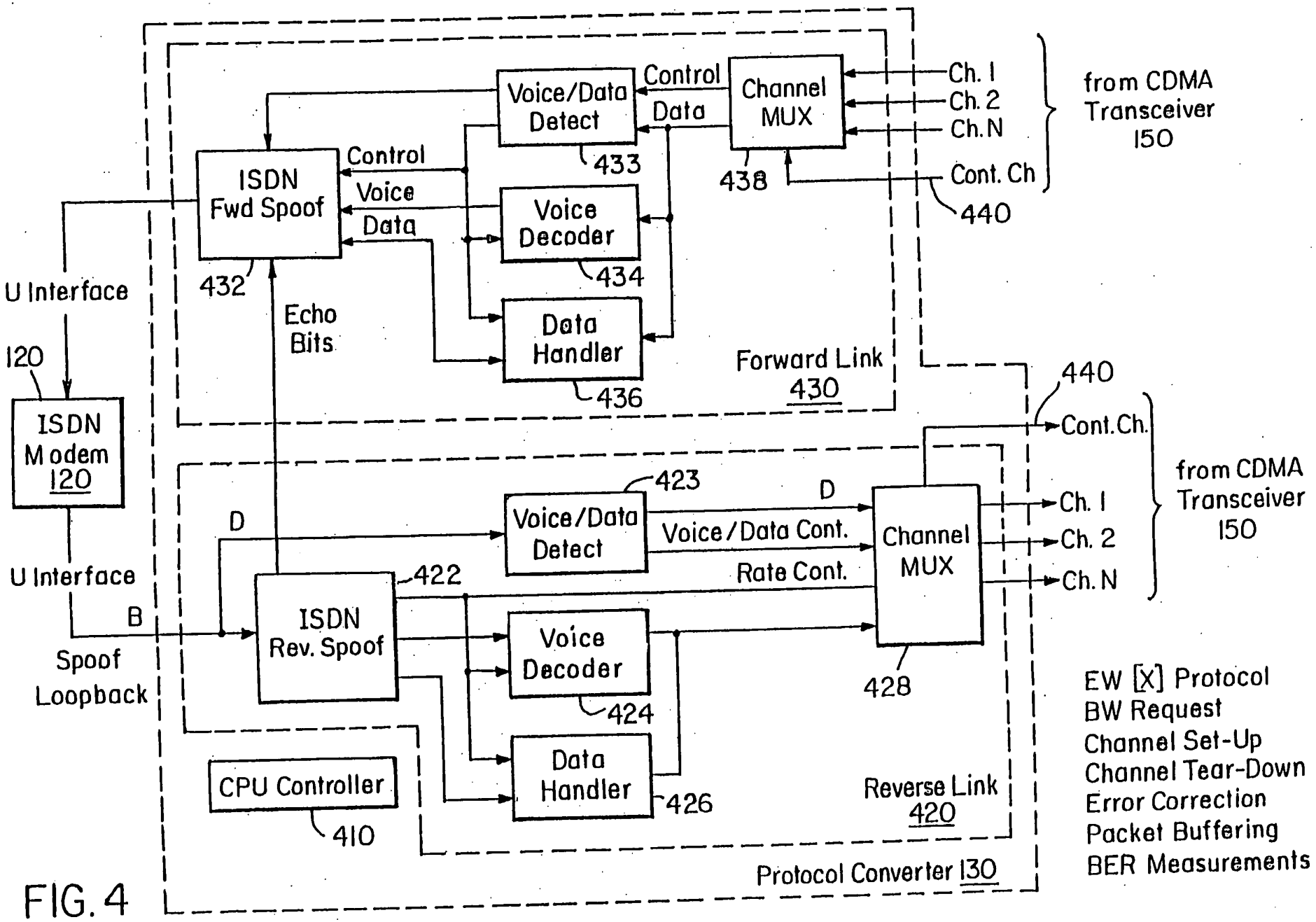
Voice/Data Detect
Control
Data
Channel MUX
Ch. 1
Ch. 2
Ch. N
Cont. Ch
from CDMA Transceiver 150
433
438
440
ISDN Fwd Spoof
Control
Voice
Data
Voice Decoder
Data Handler
432
434
436
U Interface
120
ISDN Modem 120
Echo Bits
Forward Link 430
440
Cont. Ch.
423
D
Voice/Data Detect
Voice/Data Cont.
Rate Cont.
Channel MUX
Ch. 1
Ch. 2
Ch. N
from CDMA Transceiver 150
D
422
U Interface
B
ISDN Rev. Spoof
Voice Decoder
Spoof Loopback
424
428
CPU Controller
Data Handler
426
410
Reverse Link 420
Protocol Converter 130
EW [X] Protocol
BW Request
Channel Set-Up
Channel Tear-Down
Error Correction
Packet Buffering
BER Measurements

FIG. 4

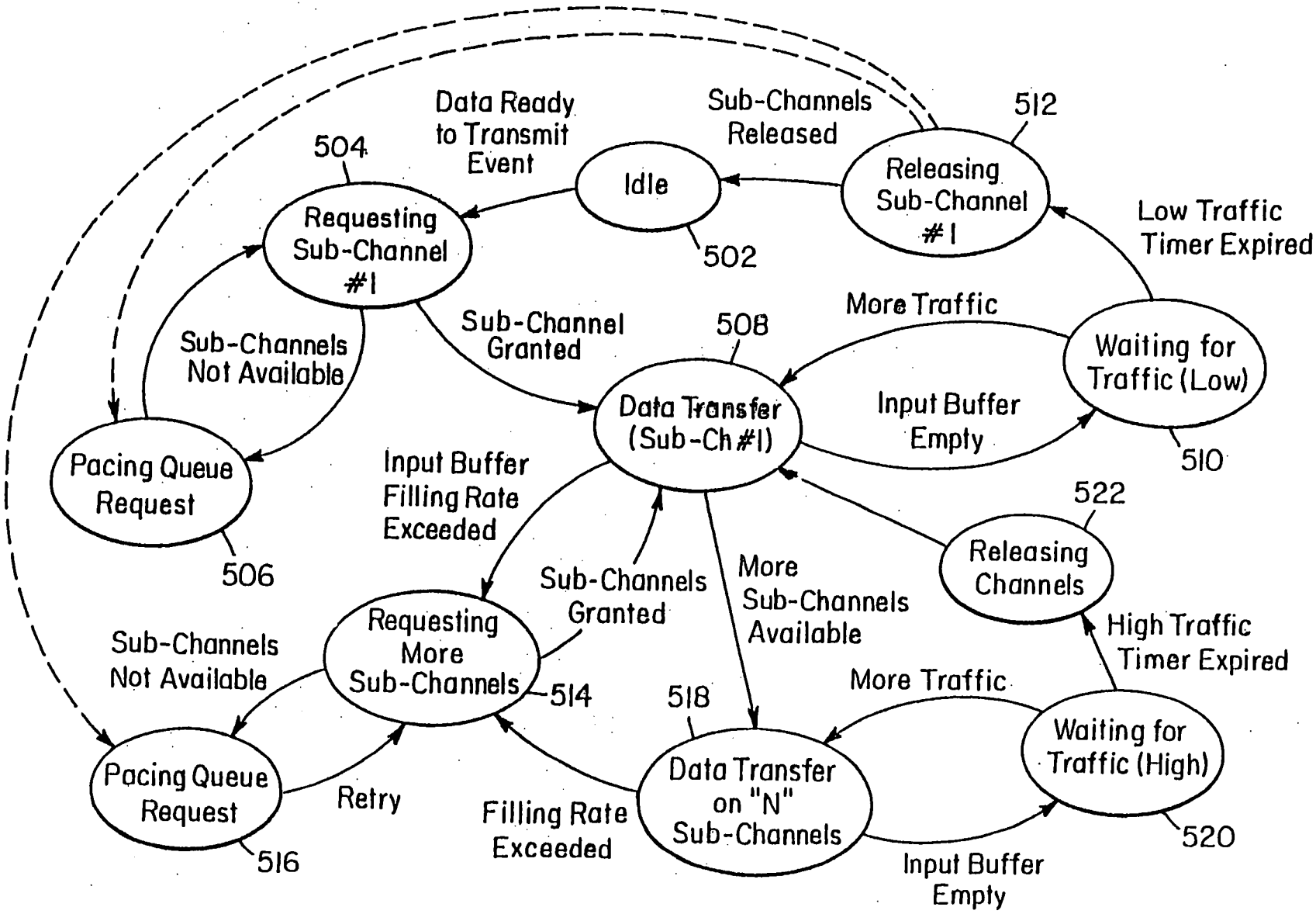
Idle
502
Data Ready to Transmit Event
Sub-Channels Released
512
Releasing Sub-Channel #1
Low Traffic Timer Expired
504
Requesting Sub-Channel #1
Sub-Channels Not Available
Sub-Channel Granted
508
More Traffic
Waiting for Traffic (Low)
510
Data Transfer (Sub-Ch#1)
Input Buffer Empty
Pacing Queue Request
506
Input Buffer Filling Rate Exceeded
522
Releasing Channels
Sub-Channels Granted
More Sub-Channels Available
Requesting More Sub-Channels
514
Sub-Channels Not Available
High Traffic Timer Expired
More Traffic
518
Waiting for Traffic (High)
Pacing Queue Request
516
Retry
Filling Rate Exceeded
Data Transfer on "N" Sub-Channels
520
Input Buffer Empty

FIG. 5

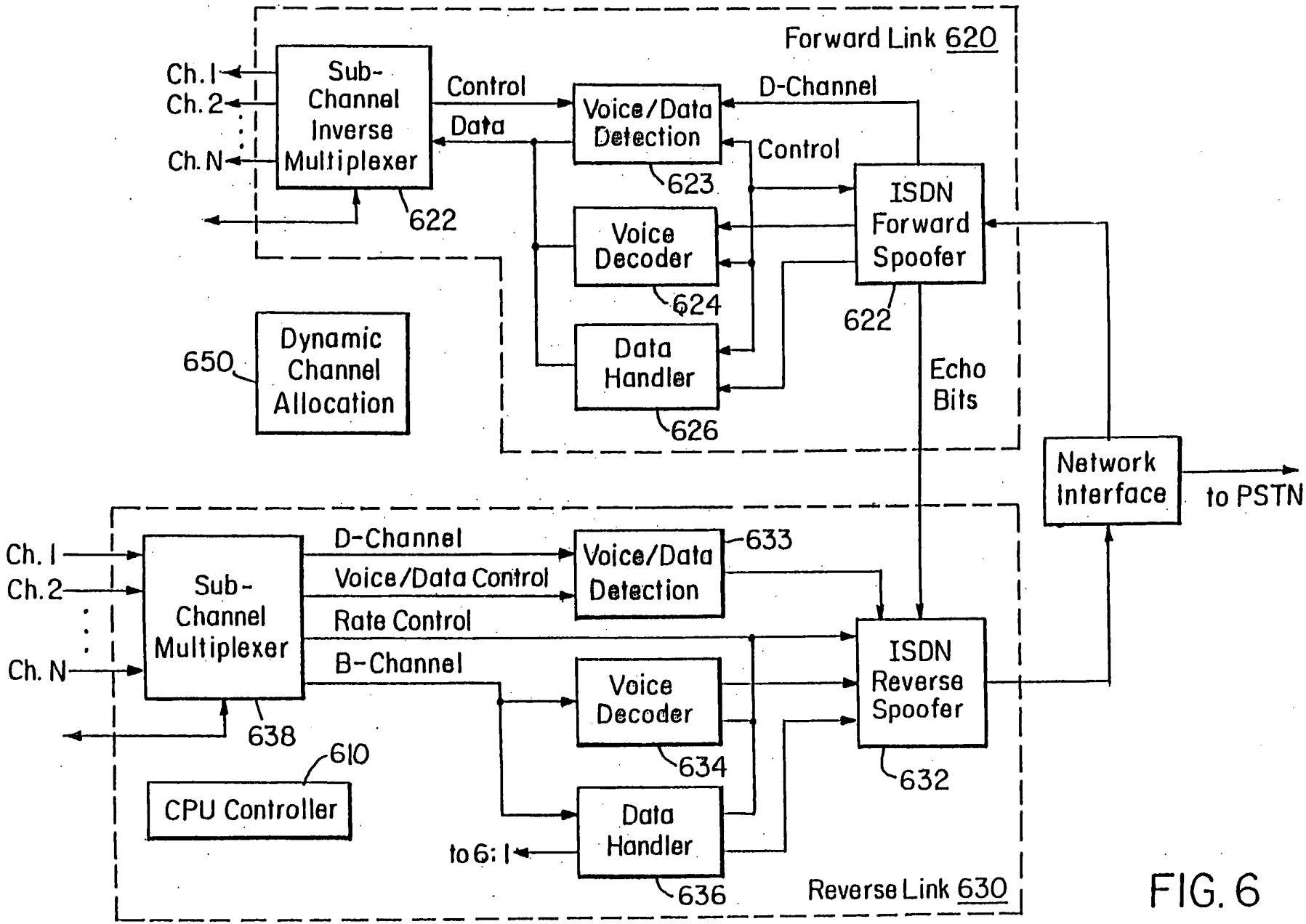
Forward Link 620
Ch. 1
Ch. 2
Ch. N
Sub-Channel Inverse Multiplexer
622
Control
Data
Voice/Data Detection
623
D-Channel
Control
Voice Decoder
624
Data Handler
626
ISDN Forward Spoofer
622
650
Dynamic Channel Allocation
Echo Bits
Network Interface
to PSTN
Ch. 1
Ch. 2
Ch. N
Sub-Channel Multiplexer
638
D-Channel
Voice/Data Control
Rate Control
B-Channel
Voice/Data Detection
633
Voice Decoder
634
Data Handler
636
ISDN Reverse Spoofer
632
610
CPU Controller
to 6:1
Reverse Link 630

FIG. 6

MAIN:
- DO Always
  - Process Port Request
  - Process Bandwidth Release
  - Process Bandwidth Requests
  - Locate and tear down unused sub-channels
- ENDDO

} 710

PORT REQUEST:
- Make reservation in least utilized sub-band
  - Reservation decision based on % of available Sub-Channels to assign (Based on parallel user BW vs. throughput efficiency)
- IF reservation was made
  - Send frequency and code assignment
  - Update allocations
- ELSE
  - Add port request to port queue
  - Calculate expected wait time
  - Send wait message to user
- ENDIF

} 720

BANDWIDTH RELEASE:
- Notify channel-bonding function
- Return frequency and code to available pool
- Update radio record

} 730

BANDWIDTH REQUEST:
- Select highest priority with lowest bandwidth utilization, including need-allocation gap
- Check other sub-bands for greatest available sub channels (Switch sub-bands if difference in sub-band space exceeds payback threshold)
- Assign sub channels based on need, priority, availability
- Notify channel bonding function
- Update radio record

} 740

FIG. 7